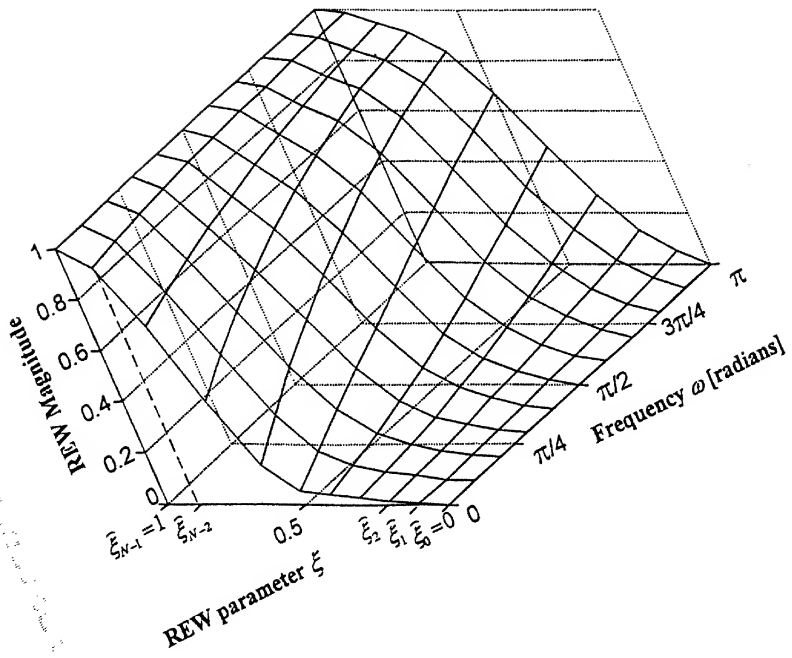
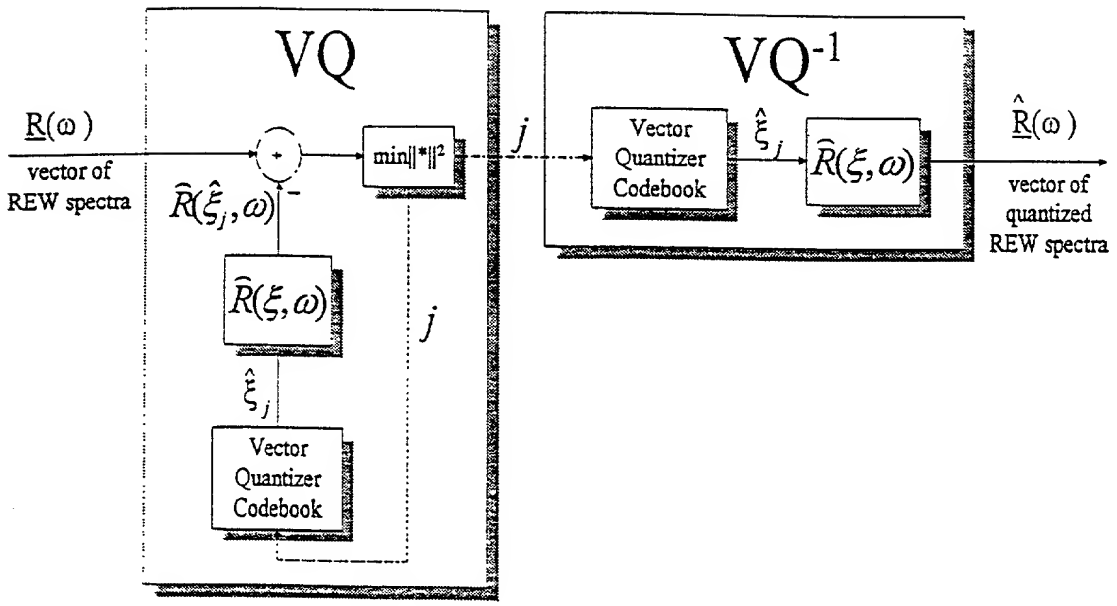
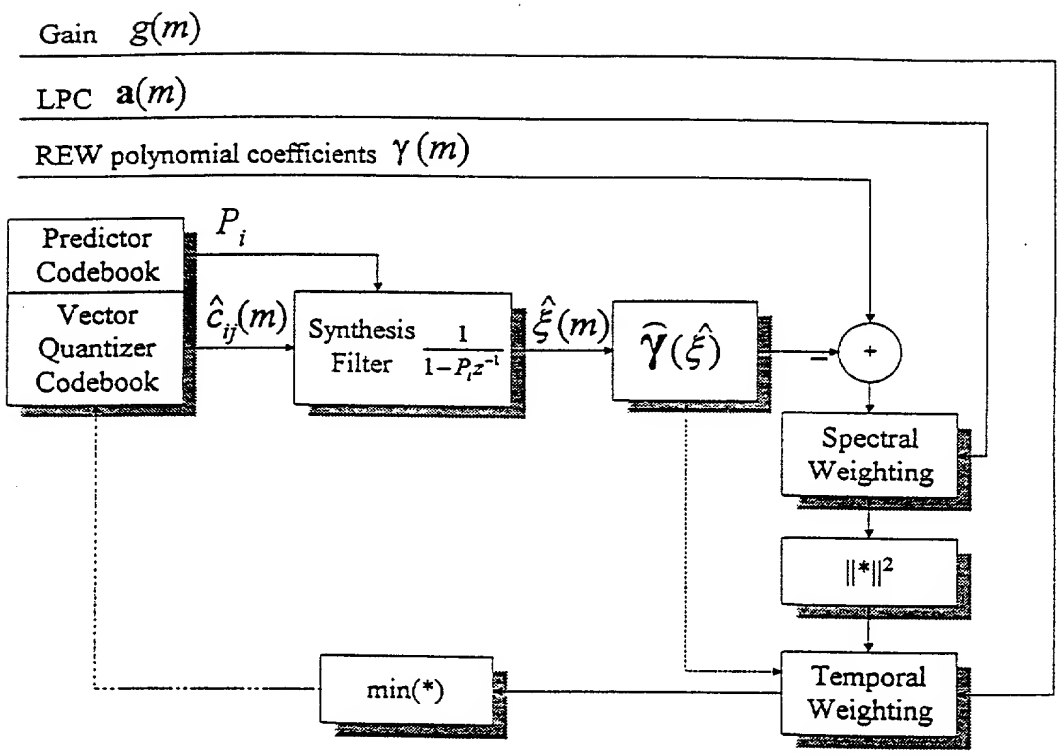
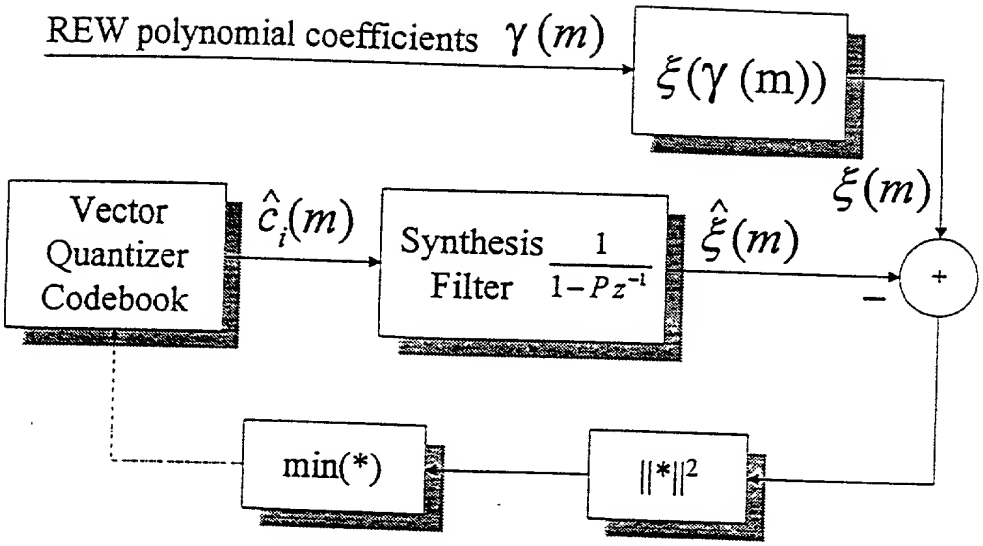
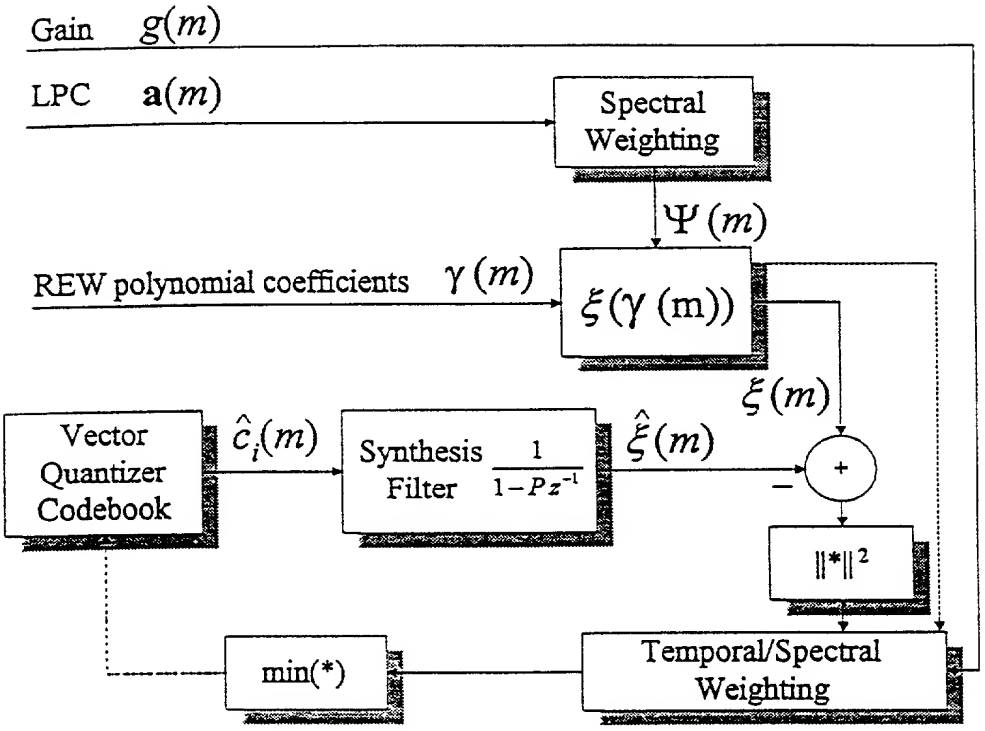
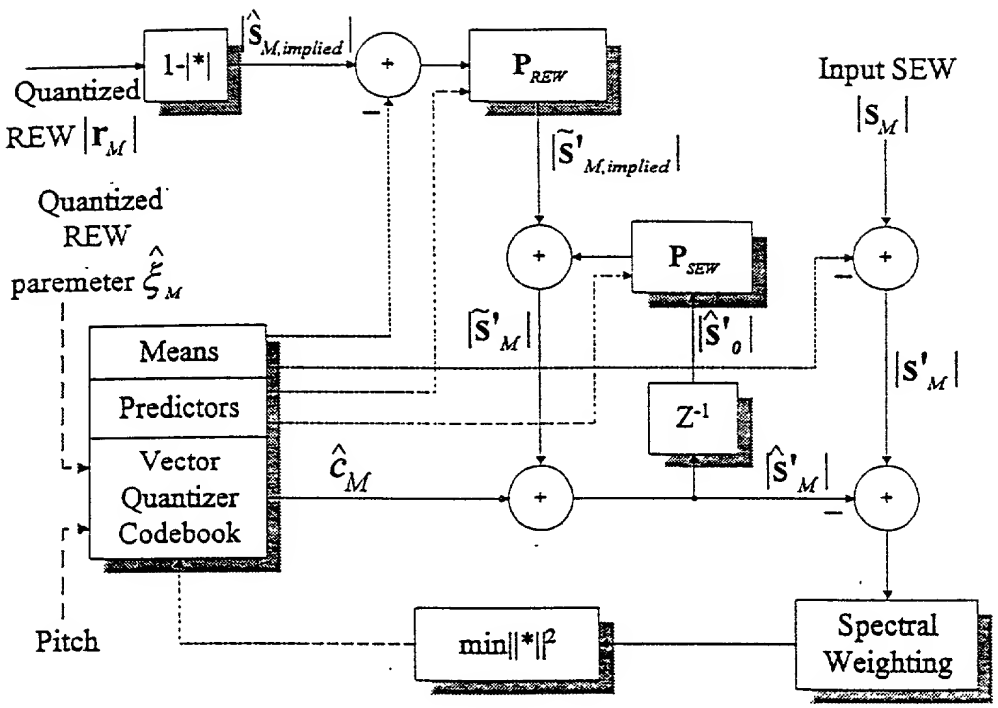

REW Magnitude
1
0.8
0.6
0.4
0.2
0
$\xi_{N-1}=1$
ξ_{N-2}
0.5
ξ_2 ξ_1 $\xi_0=0$ 0
REW parameter ξ
$\pi/4$
$\pi/2$
$3\pi/4$
π
Frequency ω [radians]

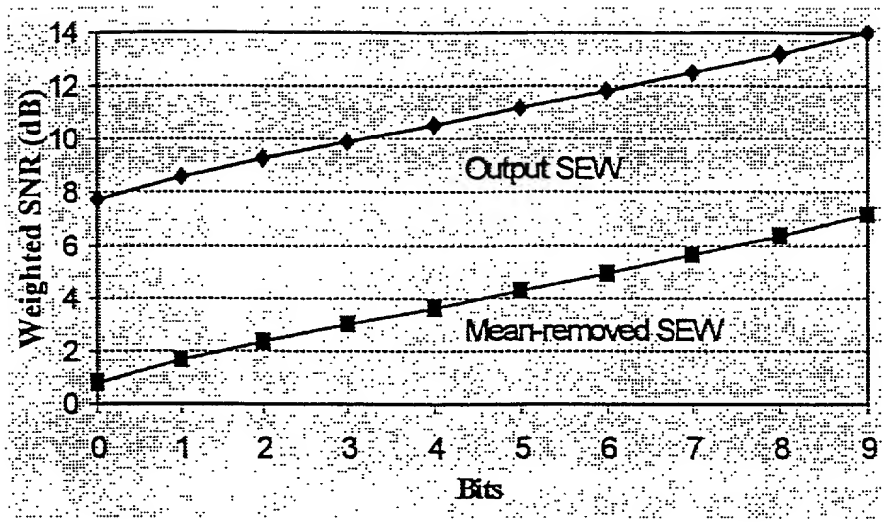

VQ
VQ-1
R(ω)
vector of
REW spectra
min||*||²
j
Vector
Quantizer
Codebook
ξ̂j
R̂(ξ,ω)
R̂(ξ̂j,ω)
R̂(ω)
vector of
quantized
REW spectra
Vector
Quantizer
Codebook

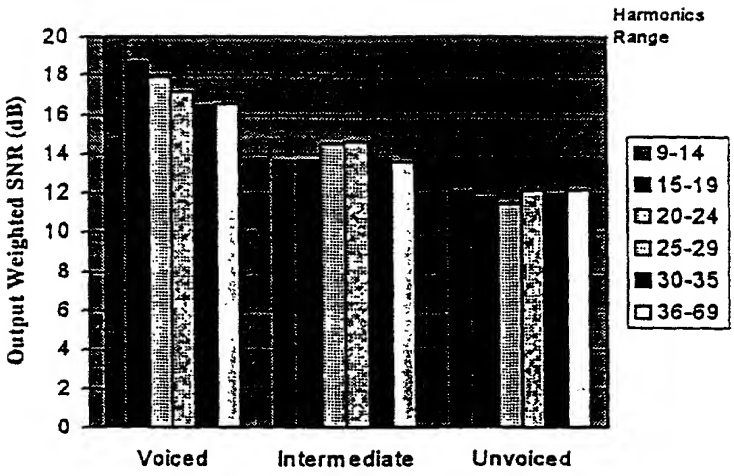

Gain $g(m)$
LPC $\mathbf{a}(m)$
REW polynomial coefficients $\gamma(m)$
Predictor Codebook
Vector Quantizer Codebook
P_i
$\hat{c}_{ij}(m)$
Synthesis Filter $\frac{1}{1-P_i z^{-1}}$
$\hat{\xi}(m)$
$\widehat{\gamma}(\hat{\xi})$
Spectral Weighting
$\|*\|^2$
Temporal Weighting
min(*)

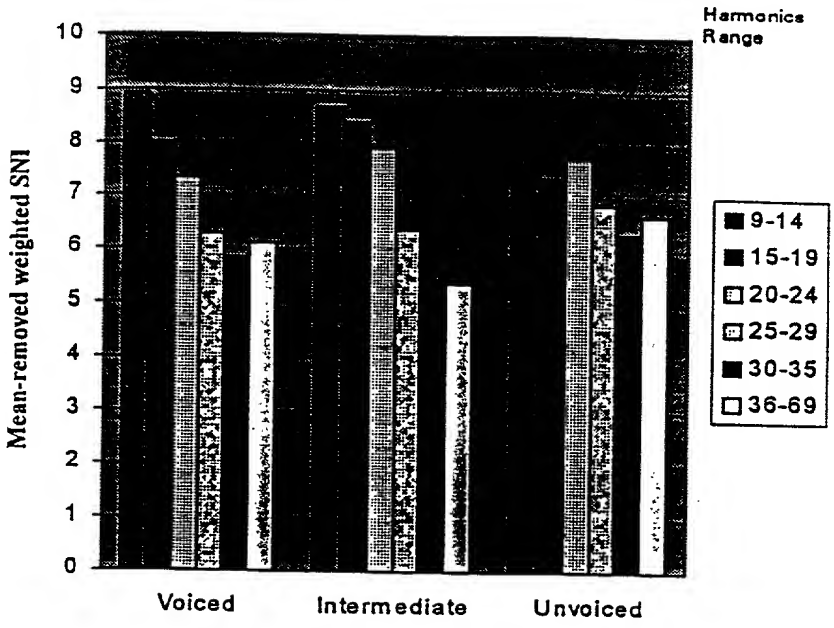

REW polynomial coefficients $\gamma(m)$
$\xi(\gamma(m))$
$\xi(m)$
Vector Quantizer Codebook
$\hat{c}_i(m)$
Synthesis Filter $\frac{1}{1-Pz^{-1}}$
$\hat{\xi}(m)$
+
−
min(*)
$\|*\|^2$

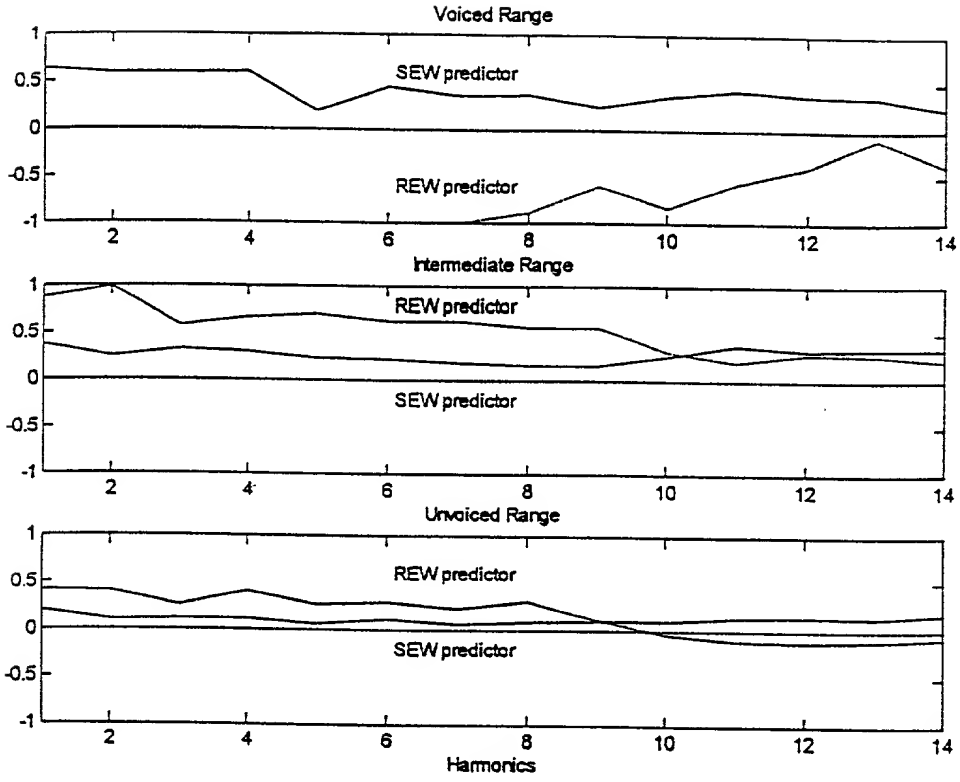

Gain $g(m)$
LPC $\mathbf{a}(m)$
Spectral Weighting
$\Psi(m)$
REW polynomial coefficients $\gamma(m)$
$\xi(\gamma(\mathrm{m}))$
$\xi(m)$
Vector Quantizer Codebook
$\hat{c}_i(m)$
Synthesis Filter $\frac{1}{1-Pz^{-1}}$
$\hat{\xi}(m)$
+
−
$\|*\|^2$
min(*)
Temporal/Spectral Weighting


Quantized REW $|\mathbf{r}_M|$
1-|*|
$|\hat{\mathbf{s}}_{M,implied}|$
$\mathbf{P}_{REW}$
$|\tilde{\mathbf{s}}'_{M,implied}|$
Input SEW $|\mathbf{s}_M|$
Quantized REW paremeter $\hat{\xi}_M$
$\mathbf{P}_{SEW}$
$|\tilde{\mathbf{s}}'_M|$
$|\hat{\mathbf{s}}'_0|$
$|\mathbf{s}'_M|$
Means
Predictors
Vector Quantizer Codebook
Z^{-1}
$\hat{c}_M$
$|\hat{\mathbf{s}}'_M|$
Pitch
min||*||²
Spectral Weighting


Weighted SNR (dB)
14
12
10
8
6
4
2
0
Output SEW
Mean-removed SEW
0
1
2
3
4
5
6
7
8
9
Bits


Harmonics Range
Output Weighted SNR (dB)
20
18
16
14
12
10
8
6
4
2
0
9-14
15-19
20-24
25-29
30-35
36-69
Voiced
Intermediate
Unvoiced


Mean-removed weighted SNI
10
9
8
7
6
5
4
3
2
1
0
Voiced
Intermediate
Unvoiced
Harmonics Range
9-14
15-19
20-24
25-29
30-35
36-69


Voiced Range
SEW predictor
REW predictor
Intermediate Range
REW predictor
SEW predictor
Unvoiced Range
REW predictor
SEW predictor
Harmonics